

EDUCATION K

OF

CHILDREN

AND

YOUNG STUDENTS

in all its BRANCHES,

With a Short

CATALOGUE

OF THE

Best Books in polite Learning and the Sciences,

AND AN

APPENDIX concerning the usefulness of
Natural Philosophy to Divines, taken out of
all the CELEBRATED writers on that Subject.

Nullius additus jurare in verba magistri. Hor.
Quæ convenerê fatetur transfuisse, atque usum pro
suis. Ter.
Floriferis ut apes in saltibus omnia libant,
Omnia nos Lucr.

The SECOND EDITION, Corrected.

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EDUCATION

OF

CHILDREN

AND

YOUNG STUDENTS

in all the Branches

of a Liberal

CATALOGUE

OF THE

British Museum



APPENDIX
to the Catalogue
of the Greek and Latin
Papyri in the
British Museum

By
J. E. B. WHITTAKER, Esq.
Keeper of the Department of
Greek and Latin Papyri

LONDON:
Printed by the British Museum Press, 1890.

THE BRITISH MUSEUM

LONDON

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1890



EDUCATION &c.



Whoever duly considers the force of Education on Men's minds, and its consequences to Society, will admire the wisdom of the ancient Brachmans, who begun the education of their children, even from their conception. For when a Woman among them was known to have conceiv'd, much thought and diligence was employ'd about her diet and entertainments, so far as to furnish her with pleasant imaginations, to compose her mind and sleep with the best temper during the time she carry'd her burden.

In order to be happy in this world we should constantly endeavour to preserve a sound mind in a sound body.

Our chief care shou'd be about the *mind*, yet the *body* is not to be neglected, because health is necessary for business and happiness.

As to the body, it should not be too warmly clad or covered winter, or summer.

For too much cloathing weakens the constitution,

2. *Bathing* in cold water, especially during the heat of Summer, cleanses the skin, promotes perspiration, and strengthens the solids. But a person ought never to go into the water, when exercise has warm'd him, or left any emotion in his blood or pulse.

3. Another thing of vast advantage to health, is a good deal of exercise, * every day in *open air*, especially *riding*. Without exercise the blood and juices thicken, the limbs stiffen, and the nerves relax.

4. Hard binding of any part of the body especially the head and breast, hinders the free circulation of the blood; and the shape, growth, and health of the body suffers.

5. A child's *diet* ought to be simple, and easy of digestion. Flesh shou'd be forebore till he is two years old. But if he must needs have flesh, let it be but once a day, and of one sort at a meal; and he should eat bread with it, and every thing else plentifully.

Whatever he eats that is solid, let him *chew* it well. From a neglect of *this* follow indigestion, and other inconveniences.

For breakfast and supper, milk, milk-pottage, water gruel, flummery, and several

* Bowling is good for the Stone and Reins, Shooting for the Lungs and Breast; Gentle walking for the Stomach, and *riding* in the *open air* is extremely good, especially for the Head.

other things us'd in England, are very fit for children.

Fruits, perfectly ripe, may be allow'd them, provided it be moderately, and not before dinner. Apples, thoroughly ripe, and gathered in some time may be safely eat.

What concerns the body and health, is, plenty of open air, and exercise, * cleanliness, temperance, or a plain diet, and no strong liquor, unless wanted as a cordial, nor too warm or strait cloathing, and the head to be kept cold. No Physic, but when absolutely necessary, and then by the advice of a skilful physician.

7. *Sleep* is the cordial of nature, and may be freely indulg'd children, for it contributes much to their growth and health. Eight hours sleep is rest enough for healthy grown persons, and it shou'd be us'd in the night as nature directs. Their beds shou'd be hard because hard lodging strengthen the parts. Early rising and early going to bed, is of vast advantage to health and business.

The body being kept in strength and vigour, so as to be able to execute the orders of the mind, the next and *principal* business is, to set the *mind* right, that on all occasions it may be dispos'd to consent to nothing but what is suitable to the dignity of a reasonable and moral agent. As the strength

* The too little as well as the too much ought to be avoided.

of the body lies chiefly in being able to endure hardships, so does also that of the mind. And the foundation of all virtue and worth consists in this, that a man be able to deny self-denial. himself his own desires and purely follow what reason directs as best, tho' the appetite lean the other way. Children shou'd therefore be us'd to go without their longings from their cradles. The first thing they shou'd learn is, that they were not to have any thing because it pleas'd them, but because it was thought fit for them.

He that is not us'd to submit his *will* to the *reason* of others, when young, will scarce submit to his own reason when of an age to use it. And therefore none but discreet and virtuous persons shou'd be about children. They shou'd not converse with ill-bred or debauch'd servants lest they learn their language, and untowardly tricks and vices. But tho' children are not to be their own chosers, yet they should be allow'd to declare their *wants*, which ought to be reliev'd with tenderness. And tho' a strict hand is to be kept over the desires of *fancy*, yet there is one case wherein *fancy* must be indulg'd. — *Recreation* is as necessary as rest or food. Children therefore must every day be allow'd to please themselves with any innocent childish play they fancy. For it is *fancy* alone that makes any thing an amusement or diversion.

Crying

Crying is a very unpleasant and unbecoming noise ; And children must not be allow'd to cry out of stubbornness, or to strive for the mastery. When they cry because they feel pain, ease them immediately in the best manner you can, but without seeming to *pity* or *bemoan* them. For this softens the mind, and makes them of a low and mean spirit. That crying, which is owing to pain, shows a softness of mind, and must be gently treated. Persuasion, or diverting their thoughts another way, may be at first the proper method. Keep up their *courage* as much as you can, so that no danger may disturb the calm use of their reason. Talk of nothing that is terrible to them, and be sure to keep them from frights of all kinds. Keep them in awe, if possible, without beating, chiding, or other servile punishments ; for a slavish discipline makes a slavish temper. Stubbornness and obstinate disobedience must be master'd with blows ; for *this* there is no other remedy. All other faults, where the *will* * is rightly dispos'd, need only the gentle remedies of advice, direction, and reproof, till the wilful neglect of those shews a perverseness of the *will*. The great art is, to teach a child to resist the importunity of a present *pleasure* or *pain*, for the sake

* The adviser shou'd observe the *mollia tempora fandi*. The giver and receiver of advice shou'd be cool and dispassionate

of what reason tells him is fit to be done, and at the same time to keep up his spirit easy, free, and active. For if children's spirits be much broke by too strict a hand over them, they lose all their vigor and industry; and without liveliness and courage they seldom attain to any thing. The true way of dealing with children is to * *reason* with them; they love to be treated as reasonable creatures, and the sooner you treat them as men, the sooner they will become such. It is use and exercise that makes us reasonable creatures; nature gives us but the seeds of it.

That which every gentleman ought to desire for his son, besides, that † valuable ingredient in worldly happiness, the *fortune* he leaves him, is contain'd in these four things, *virtue, wisdom, breeding, and learning.*

Virtue. Above all things teach him the principles of true honour and virtue, without which, he can be neither happy in this world, nor the other.

Breeding. Good qualities are the substantial riches of the mind, but it is good breeding sets them off. This consists in that decency and gracefulness of looks, voice, words, motions, gestures, and of the whole outward behavior, which takes in company, and makes

* Hoc patrium est, potius consuefacere filium suâ sponte rectè facere quam alieno metu. TERT.

† As we are made for two worlds, it is our business to endeavour after happiness in both.

those we converse with, easy and well pleas'd. A disposition of mind not to offend others, is call'd * *civility*; and *good breeding* is the most agreeable way of expressing that disposition. And this must be learnt in good company by use.

A well-bred man may be describ'd one that is inwardly possess'd with a sincere love for mankind, which he outwardly expresses in the most agreeable manner. He is not rough, captious, or uncomplaisant; shews no contempt of any person in his looks, words, or gestures; censures, or finds fault with no man; never interrupts another in his discourse, or contradicts, but where truth and charity require it; and he does it *then* with respect and without wrangling. He is always good natur'd, † civil, and obliging, without excess of ceremony, and is never uneasy to himself or others. He knows that all men steadily pursue happiness, which consists in *pleasure*, and therefore pleases those he converses with, without any flattery, dissimulation, or base compliances.

Never suffer a child to fall into any *affectation*, for this is lighting a candle to his own defects, and nothing can be more offensive,

B

A *sheepish*

* Civility and Gratitude are by *Mango Capac*, reckon'd cardinal virtues.

† It may be observ'd that pride is great incivility, hateful to God and man,

A *sheepish bashfulness*, and a *disrespectful carriage*, must be carefully avoided, by observing this rule ; not to think meanly of *ourselves*, or of *others*. Use him to change and variety of company, and take him with you on visits of civility.

Dancing.

He shou'd be taught to *dance*, as soon as he is able to learn it. For tho' this consists only in outward gracefulness of motion, yet it gives children manly thoughts and carriage beyond any thing.

His tutor shou'd be, not only a good scholar of great diligence, prudence, and virtue, but likewise a genteel, well-bred man, and of a good elocution ; because children will imitate those they converse with, especially their teachers.

Wisdom.

As to *wisdom*, I take it in the popular acceptation, for a man's managing his business ably, and with foresight in this world. In order to make children *wise*, hinder them as much as may be from being *cunning*.

Cunning is only the want of understanding, which, because it can't compass its ends by direct ways, wou'd do it by a trick, but a cunning trick helps but once, and hinders ever after. No body was ever so cunning as to conceal their being so : And when they are once discover'd every body is distrustful of *crafty* men, and all the world forwardly join to oppose and defeat them : While

While the *open, fair, wise* man has every body to make way for him, and goes directly to his business. Perform the promises you make to children and accustom them to * truth and sincerity, to a submission to reason, and as much as may be, to a reflection on their own actions.

Teach them to be good natur'd, and to hate cruelty. § Never allow them to torment any living creature, † nor to spoil or destroy any thing, unless it be for the preservation or advantage of some other that is nobler. And let them not waste any thing at all. You must by no means suffer them to dream away their time lazily or listlessly, nor to loiter at their business. For this sauntering humour is the worst quality imaginable. When a child can talk, 'tis time he shou'd learn to *read*. And when ^{Reading.} he *reads*, put into his hands some easy pleasant book suited to his capacity, wherein the entertainment he finds may draw him on, and reward his pains in *reading*. *Æsop's fables with pictures* may be made use of to this purpose, Talk often to him about the stories he has read, and hear him tell them.

B 2

• He that is not a man of truth, can never be a man of honour. Mr. *Wollaston* makes the whole of moral virtue consist in acting according to truth.

§ A good man is merciful to his beast.

† Man is the lord of the creation, but he ought not to be the tyrant of it.

them. This will bring him to delight in reading, and to express himself handsomely.

Writing. When he reads English well, enter him in writing. When he writes well and quick, let him get so much skill in *drawing in per-*

Drawing. *spective*, as will enable him to represent tolerably on paper any thing he sees, except faces.

Short-hand. Short-hand is well worth the learning, when he has an opportunity of learning it of a Master.

French. As soon as he can read and write *English*, 'tis time he shou'd learn *French*.

Latin. From *French* let him proceed to *Latin*, which is a language absolutely necessary for a gentleman as well as a scholar.

'Tis as impossible to teach children any thing while their thoughts are disturb'd with fear, as to draw fair characters on a trembling reed, therefore keep their mind in an easy temper, when you wou'd have it receive your instructions. In some ordinary grammar-schools, children are often oblig'd to learn by heart great parcels of the poets or other authors. This is usefess labour, and gives them an aversion to their books. Their catechism and grammar is enough for them to learn by heart. Make children often tell a story of any thing they know. And when they can tell tales pretty well, make them write them. This will

will bring them to speak and write handsomely.

The first exercise they are to be set upon ^{Transla-} is translating English into Latin in order ^{tion.} to practice their grammar-rules. *Clarke's Introduction* may serve for this purpose.

Let them * write dialogues, epistles, ^{Composi-} themes, declamations, essays, fables, and the ^{tion.} characters of famous men in English and Latin. But never exercise them on subjects they don't understand; for that is a sort of Egyptian tyranny, to bid them make bricks without materials. It will be necessary that they shou'd compose often in English as well as Latin, but more to their advantage to shine in their native language. Those that have a genius for *poetry*, and those only, ought to be exercis'd that way in Latin and English, but especially in English. Because few, very few indeed, can be made poets in a dead language.

Besides the above mention'd exercises, ^{Abridg-} it will be of use sometimes to abridge some ^{ment.} beautiful part of a Latin historian or other author, and to translate that abridgment into English.

Accustom them to speak on useful subjects, which they well understand, after a little meditation on the spot, and advise them to run over in their thoughts, and
to

* Reading makes a full man, conversation a ready man, and writing an exact man, BACON.

to talk to themselves at night what they have read in the day, and sometimes to write it down in the best language they are able. To talk it over to a friend will be a still greater improvement. They shou'd now and then act a good play. This will bring them to talk well in company, and prevent their studying themselves *mute*, as too many scholars do, who converse much with books, and but little with themselves or the world. Let them translate Latin into English, and that English into Latin. This will improve them in both languages at once, and enable them to imitate the style of the author they translate. They shou'd use the best verbal and other translations of the classics. Let them compose often, for an *orator's* best master is his pen. And in order to write good prose, they must read and imitate the best prose authors.

Greek. I have not yet said any thing of Greek. This language is as necessary to a *divine*, or profess'd scholar, as Latin. And every one must dig in this mine, that hopes to be master of the treasures it conceals.

Arithme- After some progress made in Greek, it
tic. will be time to learn arithmetic. This is an easy science, and there is no business can be done without it.

Ancient Geography. *Geography* comes next and I think *ancient* geography is enough for school boys.

But

But let them begin with a *new* general map of the world, and afterwards be brought acquainted with the *old maps*, and use them constantly in reading the classics.

The best maps for the classics are those of *Cellarius*, in his compleat body of *old geography* intitled, *Notitia orbis antiquæ*, in 2 vols. quarto.

They should read a good weekly *news* ^{News-}
paper, and their teacher shou'd explain every ^{paper.}
thing they don't understand therein.

When they understand the use of maps, ^{Chrono-}
it will be proper to teach them as much ^{logy.}
Chronology as is just necessary for their reading of history. This may be selected out of *Strauchius* publish'd by *Sault*. *Geography* and *Chronology* may be look'd upon as the two eyes of history, if these shine dim, history must be a very obscure, unpleasant entertainment. They may learn the history of their own country in *Tindal's Abridgment*, which will be enough for them while at school. They can't compose too often, nor study eloquence too much. If their parts enable them to write for the instruction of the learn'd world in general, a Latin style will be proper. In writing they must be sure not to use any improper word or expression, nor those that are uncommon in good authors. 'Tis the fault of pedants to admire nothing in the best writers but what they eldom use.

A teacher

A teacher shou'd oblige his scholars to read every thing with a good accent, audibly and distinctly. A fine delivery is an agreeable accomplishment, but the best composition deliver'd with affectation, like a good piece of music ill perform'd, is sure to disgust. As *reading* is only *speaking* out of a book, it ought to be done as naturally as one speaks to his friend. In all their studies let them proceed regularly, and master one thing before they begin another. Whatever they take in hand let them follow it steadily till there is an end of it. * *One* book thoroughly understood will improve them more than *twenty* read carelessly, or in haste. All their ideas and notions shou'd be clear and distinct; a confus'd heap of colours without light or shade will make but a sorry picture.

Industry must be encourag'd in them as much as possible, for it is the only way to learning as well as a fortune. But yet they must be allow'd now and then to unbend their mind to keep up their sprightliness. A muzzy fire is good for little, it shou'd always burn with the brightest flame.

After the classics let them apply to Logic, Ethicks, Mathematicks, Physics, and Metaphysics.

Modern

* It is an elegant observation of the polite author of the *Governess*, That a Head, like a house, when cramm'd too full, and no regular order observ'd in the placing what is there, is only litter'd instead of being furnish'd.

Modern Geography comes next ; and the first thing to be understood therein is the use of the terrestrial globe ; in the next place a good system of modern ^{Modern} *Geography* must be read.

After this they may proceed further in Chronology, towards the understanding of which as much astronomy as the use of the celestial globe will be necessary.

They may afterwards make a further progress in Astronomy, which is a very delightful science, and the bright lights it treats of, are visible and shining proofs of the greater glory of God, who made them.

It will be of great advantage to students in Astronomy to have a sight of an Orrery.

No gentleman or scholar wou'd willingly be ignorant of the customs and curiosities of his own country ; and therefore besides the history of *Greece* and *Rome*, he shou'd be well acquainted with that of his native country. A small insight into *universal history*, such as may be had from *Salmon*, and *Puffendorf's Introduction*, may suffice. In reading history let them lay before them *Geographical Maps and Chronological Tables*. Some small knowledge of medals will likewise be useful to a reader of history.

In all their studies the use of a common place-book ought to be recommended to them. And let them mark with a pencil

Common
Place-
book.

C

in

in the margin of their books such passages as deserve a second reading.

Civil
Law.

The general part of the *civil law* may usefully employ some part of their time, and the laws of their own country will be still more useful to them.

Laws of
England.

Mathema-
tics.

They shou'd by all means go thro' a course of pure mathematics, because natural and experimental philosophy can't be so compleately understood without them. They are besides, of great use to fix their attention, and to enlarge their capacity.

Experi-
mental
Philoso-
phy.

They ought likewise to go through a course of experimental philosophy; a sight of the experiments will enable them to understand what they read.

Divinity.

Divinity is a science fully contain'd in the Old and New Testament; it is there, and there alone, we must study it by the help of the best commentators. The only way to be a good divine is to be a good text-man in the * original. Let them begin with reading the New Testament, in the original, and the best commentators thereon, and always judge impartially for themselves. They must know with their own understanding, as well as see with their own eyes. They shou'd consider that they don't make truth, and therefore must take it as it is. And if they wou'd go to heaven at all, they must be content

New Testa-
ment.

* There is no coming at the Sense, without understanding the language in which it is deliver'd.

content to go there in God's way, and not their own. It is God alone has a right to lay down the terms of salvation, and none can dispence with, nor alter them.

After they have read a chapter in the original, with the commentators thereon, let them read the text leisurely over again by itself, and recollect what the commentators have said thereon ; and where they can't do that, let them have recourse to the commentators. After this, but not before, they may read some *system* of divinity.

In order to understand the Old Testament, ^{Hebrew,} it is proper to learn Hebrew.

Painting, architecture, music, and heraldry, are amusements to a scholar, and make a part of gentlemen's conversation.

As *painting* requires too much time to attain a tolerable skill in it; and is a sedentary recreation ; it is enough for a scholar or gentleman to understand the language of painters, and to be a tolerable judge of their performances. Architecture and heraldry may be study'd as amusements, but instrumental music will waste too much time. If he has a good voice he may apply himself to *vocal* music, otherwise it will be of little use.

Merchant-accounts can't be too much re-^{Merchant}commended to a young gentleman. He ^{Accounts.} that keeps an account of his income and expences,

pences, and thereby has constantly under his view the whole course of his domestic affairs, seldom or never lets them run to ruin, but so proportions his expences to his income, as not only to keep out of debt, but likewise to save something. * The good things of this life are of too great use to the souls and bodies of men to be squander'd away. He that by extravagance or carelessness falls into poverty, falls into many temptations, and every where meets with cold looks and contempt. A person shou'd not over fatigue his spirits, nor study at one time longer than the mind is capable of giving a close attention without wandring. The mind endures not to be constantly employed in the same thing or way, and sedentary and studious men shou'd have some exercise, that at the same time may divert their mind, and employ their bodies. Dancing, fencing, and riding the great horse, are not only healthful exercise, but genteel accomplishments, fencing indeed is dangerous to life, but that is owing to want of prudence.

Garden-
ing.

For a country gentleman I shou'd propose *gardening*, as a fit and healthful recreation for a man of study or business. Recreation is not being idle, but easing the weary'd part by change of business.

The

* If a man will keep but of even hand, his ordinary expences ought to be but to the half of his Receipts. And if he think to grow rich, but to the third part. *BACON'S essay on expence.*

The last part of education is *travel*. The ~~Travel~~ young gentleman shou'd learn the language and inform himself of the customs, manners, religion, laws, government, noble trades and curiosities of the country he is in, by observing, and reading ; and by conversing with the best and most knowing persons, must read * men as well as books, examine the designs, observe the address, and consider the arts, inclinations, and temper of those he meets with. He shou'd endeavour to † learn something of every one he converses with ; and this is best done, by hearing men talk of their own professions.

Before I conclude, it will be proper to say ^{Contro.} something about studying ^{versy.} controversy. The young student shou'd read one such author of each side as is allow'd by his own party to have pleaded his cause the best. He may indeed read the works of an able writer of known integrity, tho' what was wrote against him be bury'd in oblivion. But he shou'd never waste any time in reading bad books.

The

“ * Yes, I despise the man to books confin'd,

“ Who from his study rails at human-kind.

“ Tho' what he learns he speaks, and may advance ;

“ Some general maxims, or be right by chance.”

POPE.

† See Sir I. Newton's advice to a Traveller. No. 23. of the Universal Magazine, and Bacon's Essay on Travel.

The learn'd languages shou'd never be quite dropt, because it is absolutely necessary for a profess'd scholar to have a good acquaintance with all the fine authors of antiquity, and this will not hinder, but promote his progress in other studies. Let him study polite learning and the sciences alternately, and continually have recourse to what he has learnt, that he may not forget it. Knowledge, like riches, makes itself wings and flies away, without a constant endeavour to prevent its flight, by a proper recollection to revive the impression, and to make it lasting.

Order and constancy is said to make the great difference between one man and another. Show him the advantages of a good method, and the several sorts of it. The young student shou'd not by any means confine himself to one science alone, for that is apt to give a pedantic narrowness of mind. That one science becomes every thing. The several sciences and politer arts reflect a light on each other *, and a student shou'd take a general survey and taste of them all. He shou'd inform himself of the most material authors of the several sects of philosophy

* Histories make men wise, Poets witty ; The Mathematics subtil, Natural Philosophy deep, Moral grave, Logic and Rhetoric able to contend. To study the Schoolmen will assist one to distinguish or find differences. To study the Lawyers cases will help him to find out one thing to prove and illustrate another. *About studia in mores.* BACON'S Essay on Studies.

phy and religion, and may, if he has leisure and opportunity, go thro' a course of lectures in anatomy, chymistry, botany, and physic. But he shou'd aim at a mastery only in his own calling, and in religion, which is enough to employ his whole life. And his profession or calling ought to be that which best suits his genius and inclinations.

No gentleman that is design'd for a lawyer, divine, or statesman, can study eloquence too much. In order to shine therein, he must constantly read and imitate such authors as are the greatest masters of thought, language, and method. He must write on the same subjects, and endeavour to equal, or excel their beauties. He must never read without thinking; Reading only furnishes us with the materials of knowledge, it is thinking that makes them ours. He ought to make the best use of his time, and to pray for God's blessing on all his * studies. For it is he only that gives man understanding, and crowns his honest industry with success. Prayer is a mean to qualify the mind of a man for divine favours, and it is but fit and reasonable that there shou'd be a distinction made between him that serves God, and him that serves him not.

A CATA-

* Study without prayer is Atheism, and prayer without study is Presumption. Bishop SAUNDERSON.

A
CATALOGUE
OF THE

Best Books for Beginners in polite
Learning, Arts, and Sciences.

For a critical understanding of Grammar.
Latin and Greek Grammar.

Vossius, Johnson's Commentaries, the
Westminster Greek Grammar in
verse.

French Grammar. Buffier.

English Grammar. Brightland.

Rhetorick. Vossius.

Latin Prose. Tully, Cæsar, Livy, Sal-
lust, Pliny's epistles.

English Prose. Bolingbroke, Tillotson,
Swift, Addison, Dryden's Prefaces, The
present Earl of Orrery's Letters, Sir William
Temple's Essays; Speeches in Parliament.

Globes. Harris on the Globes and Orrery.

Antient Geography. Wells's Dionysius,
Cellarius.

Modern Geography. Gordon's Grammar;
Varenus.

Chronology.

Chronology. Strauchius by Sault, Sir I. Newton.

Antient Logic. Wallis, Aldrich.

Modern Logic. Watts's Logic, Locke on Human Understanding, and on the Conduct of the Understanding, Crousaz's Art of Thinking.

Metaphysics. Locke on Human Understanding, Le Clerc's * Ontologia, &c. Clarke and Leibnitz's Letters.

Ethics. Tully's Offices, and his other Philosophical Works, Puffendorf's *Officium hominis et civis*, with Barbeyrac's notes, Aristotle's Ethics to Nicomachus, Wollaston's Religion of Nature delineated, Pope's Essay on Man and Ethic Epistles, with Warburton's Notes. The Greek Moralists cannot be read too much, particularly Aristotle and Plato.

Politics. Locke, Hoadly, Algernoon Sidney. There is no keeping up a conversation in *England* without being well vers'd in Politics.

Audi alteram partem.

After these may be read Cudworth's Intellectual System, which is a good Compendium of Pagan Theology.

Mathematics. Strong on the usefulness of Mathematics.

Arithmetic. Hill.

D

Geometry

* Le Clerc has committed many errors in transcribing from Locke.

Geometry. Cun's Euclid.

Algebra. Saunderfon, Newton. Hammond.

Trigonometry. Emerson, and his Projection of the Sphere.

Logarithms. Sherwin.

Conic Sections. Milnes, Hospital.

Fluxions. Newton by Colson. It is proper the young students should have a case of pocket instruments, with Robertson's Treatise on the use of them.

Natural Philosophy. Keil's Introduction, Rowning, Gravesande by Desaguliers, Mariotte's Hydrostatics by Desaguliers, Newton's Principia and Optics.

Astronomy. Keil, Whiston, Dr. Long, Gregory.

Jesuits *Drawing in Perspective.* Chambers's Perspective, Wolfius's System of Mathematics, Ward's young Mathematician's Guide, Oughtred, and Moliere's Mathematics are useful books.

Short-hand should be learned of a Master.

The General part of the Civil, or old Roman Law.

* Puffendorf *de jure naturæ et gentium*, Grotius *de jure belli et pacis*, both with Bar-

* This Author treats of the Laws of Nature, and of Nations, which result from this Consideration, that the whole world is a universal Commonwealth, and every Nation like a large Family.

Barbeyrac's notes. This perhaps is enough of the *general* part of the Civil Law. They that would know more, may read *Justinian's* Institute, which strictly speaking, contains the fundamentals of it.

Divinity. ~~Chubb's previous Question,~~ Clarke's Attributes, Grotius de veritate, ~~by Le Clerc,~~ West on the Resurrection, Trial of the Witnesses, Mills's Greek Testament.

New Testament. Compare the original with the best translations, especially the Vulgate. The best commentators are ~~White-Hammond~~ ^{my copy} by, Clarke, ^{my copy} Pyle, Locke, Taylor on the Romans, ~~Dr. Benson.~~

After these ~~The plain account of the Lord's Supper,~~ Taylor on Original Sin, Sykes on Sacrifices and Revelation, ~~Clarke on the Trinity, Chubb on the Father's Supremacy and God's Justice,~~ should be read.

Schmidius's and Cruden's Concordance, ~~Fox's N. Testament, and Whiston's Harmony~~ are useful books.

Hebrew. Bennet's Hebrew Grammar, Buxtorf's Grammar and Lexicon, Robertson's Lexicon by Leusden, Bythner's Lyra, and Hutter's edition of the Hebrew Text will be useful to beginners.

Old Testament. Arias Montanus's Hebrew bible and interlineary version, Taylor's Hebrew Concordance, Grabe's Septuagint, and the vulgate Translation.

N. B. The Greek of the Septuagint version, which was used by the Apostles themselves, will serve to show what words in the Hebrew answer the Greek words us'd by the Apostles

Commentators on the Old Testament. Patrick and Lowthe, Pyle, ~~Le Clerc~~, Pool's Synopsis.

Patrum Apostolicorum opera, publish'd by Ruffel, and Minutius Felix, may be now read.

History of the Jews. Old Testament, The Apocrypha, and Prideaux's Connection.

If any one has an inclination to be a little acquainted with the schoolmen, *Aquinas's secunda secundæ* will be sufficient.

History of England. Rapin and Tindal, Kenner, ~~Eacher~~, Gibson's Cambden, Horsey's Britannia Romana.

Universal History. Puffendorf and Salmon.

Ecclesiastical History. ~~Le Clerc's two~~ ^{Gubius at large with Valerius' Notes,} ~~first Centuries~~ ^{Parker's abridg.} ~~The four first in Eusebius,~~ ~~Socrates, &c.~~ Paul's council of Trent, Burnet of the Reformation, abridg'd, ^{have} ~~King of the~~ ^{Government of} Primitive Church, and ~~of the Apostles~~ ^{his primitive Christianity} Creed.

Laws of England. Jacob's Law Grammar, and his Law Dictionary, Wood's Institutes, Dr. and Student, Grey's Abridgment of Gibson's Codex, Jacob's Lex Constitutionis, St. Amand's Essay on the Legislative power.

In

In order to improve one's judgment and taste for the polite Arts, a general survey of them may be taken in the following authors.

Rollin's History of the Arts and Sciences, Architecture. Gibbs.

Painting. Dryden's *Fresnoy*, by Graham.

Heraldry. Nesbit, will teach how to blazon and marshal coats of arms, which is enough for a gentleman.

Music. ~~Motet~~ ^{Corelli, Purcell, Handel, Geminiani, &c.} and Rameau.

Anatomy. ^{Kell} ~~Chifelden.~~

Surgery. ¹ ~~Boerhaave.~~ ^{Sharp.}

Physic. Pitcairn's philosophical elements of Physic, Cheyne's essay on Health, Sydenham, Hippocrates, Dr. Mead's *Medica Sacra* and other Works.

Divinity and Controversy. ~~All Dr. Sykes's~~ ^{The Holy Bible} ~~works,~~ ^{Tillotson, Beveridge,} Chillingworth, Hoadly, Hales of ^{Bull, Lelley, Hammond,} Eton, ~~Dr. Samuel Clarke, Mr. Joseph Mede,~~ ^{Stillingfleet, Sherlock,} Dr. Jackson, Dr. Middleton, Limborch. ^{by numerous others printed by Catalogue}

Sermons. Hoadly's terms of acceptance, Tillotson, ~~Dr. Samuel Clarke.~~

Books of Natural Philosophy, &c. which may be understood without Mathematics.

Spectacle de la nature by Humphreys.
Derham's *Physico-theology*, and *Astro-theology.* Algarotti

Algarotti on Light and Colours.
 Fontenelle's Plurality of Worlds.
 Hugen's Planetary Worlds.
 Voltair's Natural Philosophy.
 Harris's Astronomical Dialogues. Clare's
 Motion of Fluids.

Carlton's Astronomy and Chronology,
 Ray on the Creation, Whiston's Theory,
 and Keil against it, and against Burnet,
 Rohault by Dr. Clarke, Worster's Prin-
 ciples, Bentley's Sermons, ~~Creech's Lucre-~~
~~tius~~, The Antediluvian World, Matho by
 Baxter.

Gardening. Millar's Dictionary. ~~Laurence~~.

*Authors to improve one's Taste for
 Prose and Verse.*

ARISTOTLE's Rhetoric, and Poetics,
 Longinus, Tully, Quintilian, Hor-
 ace's Art of Poetry, Boileau's and Vida's
 Art of Poetry, Bossu on Epic Poetry, Trap's
 Poetical Prælections, Spence on the Odyssey,
 Buckingham's Essay on Poetry, Roscom-
 mon's Essay on Translated Verse, Pope's
 Essay on Criticism, and his Notes on
 Homer, Addison's Criticism on Milton,
 Dryden's Prefaces, Rollin's Belles Lettres,
 Dictionary. Ainsworth by Patrick
 Lexicon. Robertson, or Hedericus.

Books

Books of Poetry and Entertainment.

MILTON, Telemachus, Spencer, Dryden, Hudibras, Pope, Prior, Swift, The Oeconomy of human life, Bacon's essay's, The Spectator, Guardian, Tatler, Shakespear, Otway, Addison, Fletcher, Congreve, Wycherley, Buckingham, Roscommon, Denham, Dr. Young's Satyres, Thompson's Seasons, Fielding's Joseph Andrews, Hart, Waller, ~~Cotton's Virgil Traveller~~, Crito by Sir Harty Beaumont, ~~Rabelais~~, Don Quixot, The Travels of Cyrus, Don Quevedo, Maundrel's Travels, ~~Dampier's History of the World~~, Lord Anson's Voyage round the Globe; ~~Nathaniel's Voyages~~, Dampier's Voyages, ~~Harris's~~ Collection of Travels and Voyages, Du-halde's Description of China, Dr. Arbuthnot, Fenton, Somerville, ~~Croft's Fables~~, Gay's Fables, and other Works. To these I shall add Garrick, who *pleases* in the study, and *charms* on the Stage.

It is needless to give a catalogue of *Greek* and *Latin* books; for all the *Greek* are good to the end of *Marcus Antoninus*, and all the *Latin* to the end of *Trajan*.

The Latin Writers are well imitated by *Erasmus*, *Buchanan*, by the Poets of Italy publish'd by Pope, and in the *Musæ Anglicanæ*.

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APPENDIX,

Concerning the Usefulness of
NATURAL PHILOSOPHY
to DIVINES.

Slave to no Sect, who takes no private Road.

But looks thro' Nature, up to nature's God.

Pope's Essay on Man.

BEfore I take my leave of this subject, I shall recommend Natural Philosophy as a very useful study to Divines. The Scripture itself has a good deal of it; it furnishes many strong arguments in favour of religion, and is a noble fund of pulpit-oratory.

The creation, as Mr. Addison finely observes, is a perpetual feast to the mind of a good man; every thing he sees cheers and delights him; providence has imprinted so many smiles on nature, that it is impossible for a mind, which is not sunk
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in meer gross and sensual delights, to take a survey of them without several secret sensations of pleasure.'

Natural Philosophy is that *Science* which makes us sensible of the pleasure, that gives us a taste of the *Creation*, and renders it not only pleasing to the imagination, but to the understanding. It does not rest in the murmur of brooks, and the melody of birds, in the shades of groves and woods, or in the embroidery of fields and meadows, but considers the several ends of providence, which are served by them, and the wonders of divine wisdom, which appear in them; it heightens the pleasure of the Eye, and raises such a rational Admiration in the soul, as is little inferior to devotion; for the chearfulness of heart which springs up in us from the survey of *nature's* works, is an admirable preparation for gratitude: the mind has gone a great way towards praise and thanksgiving that is fill'd with such a secret gladness; a grateful reflection on the *supreme cause* who produces it, sanctifies it in the Soul, and gives it its proper value; such an habitual disposition of mind consecrates every field and wood; turns an ordinary walk into a morning or evening sacrifice, and will improve those transient gleams of joy, which naturally brighten up and refresh the

E soul

soul on such occasions, into an inviolable and perpetual state of bliss and happiness.

A survey of this beautiful scene of things that lies before us, is enough to convince us of the *being* and *providence* of God. *For the invisible things of him from the creation of the world are clearly seen, being understood by the things that are made, even his eternal power and Godhead.* And mankind are plac'd on this theatre of the world to view, admire, and applaud these glorious scenes of earth and heaven, the workmanship of God's hands; and as the priest of nature to offer up the sacrifice of praise and thanksgiving for the whole creation. Let us then lift up our eyes to the firmament, or rather * *expanse*, where the handy-work of God presents itself to our view, and ask ourselves some such questions as these.

What power built over our heads this beautiful and magnificent arch, this spangled canopy? § *That stretch'd forth the heavens like a curtain. and spread them out like a tent to live in?* Who adorn'd those heavens

* Sir Isaac Newton has prov'd that the heavens are void of almost all resistance.

§ See Psalm 8. When I consider thy heavens, the work of thy fingers, the moon and the Stars which thou hast ordained. What is man that thou art mindful of him? and the son of man that thou visitest him, &c.

Psalm. 19. The Heavens declare the glory of God, and the firmaments sheweth his handy-work.

vens with such a variety of shining * lights all regular in their motion? Who cover'd the heavens with clouds, and painted those clouds with such a variety of colours, and in such a diversity of shades and figures as the finest pencil cannot emulate? Who form'd the sun of such a size, and plac'd it at such a convenient distance, as not to hurt, but only to refresh and nourish the ground with its kindly warmth? † Its beauty is glorious to behold, its motion wonderful to consider!

Who made the *Moon to give light in the night*, to regulate the ebbing and flowing of the sea, whereby its water is kept in constant motion, and so preserv'd from putrefaction, and fitted for man's conveniences? Who but an eternal and almighty Being, God alone, *who establish'd the world by his wisdom, and stretch'd out the heavens by his understanding?*

If we descend lower, what a glorious proof of divine wisdom, do we meet with in the *air*, which is so wonderfully contriv'd, as at one and the same time, to support clouds for rain, and to afford winds for health and traffick, to be proper for the

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breath

* And every star perhaps a world
Of destin'd habitation. —

MILTON.

† Its seven rays fall as the seven notes in our music.

breath of animals by its spring, for causing
 * sounds by its motion, and transmitting light
 by its Transparency? By whose command, and out of whose treasuries are
 thunder and lightning, wind and tempest
 sent forth to purify the air, which would
 otherwise stagnate, and to consume the
 vapours, which wou'd otherwise hurt us?
 And by what skilful hand is the *water*,
 drawn in vapours from the † sea, made fresh
 and bottled up in the *coluds*, to be sent *upon*
the wings of the wind into different countries,
 and dispers'd over *the face of the whole*
earth in gentle showers? So that the maker
 of all *has not left himself without witness*,
to any nation upon earth, in that he does good,
and gives them rain from heaven, and fruitful
seasons, filling their hearts with food
and gladness. He calleth the waters of the
sea, and poureth them upon the face of the
earth. He watereth the hills from his
chambers, he sendeth the springs into the
vallies, which run among the hills. He maketh
small the drops of water, they pour
down according to the vapour thereof, which
the clouds do drop, and distil upon man abundantly.

Whose power and wisdom was it that *hung*
the § earth upon nothing? That beautifully
 distinguished

* To this we owe the charms of music.

† See Dr. Halley on the origin of fountains.

§ For earth hath this variety from heav'n

Of pleasure situate in hill and dale.

MILTON.

distinguished it into mountains and rivers, hills and vales to embellish the scene and deversify the prospect? Who cover'd the dry land with such a lovely carpet of green grass and other * herbs of a colour the most agreeable and useful to the eye? Who deck'd and garnish'd this, with plants and flowers so exquisitely adorn'd with various and inimitable beauties, *that even Solomon in all his glory was not array'd like one of them?* That plac'd the plant in the seed in such curious and elegant foldings as afford at once both a pleasing and astonishing spectacle? That painted and perfum'd the † flowers, gave them the sweet odours which they diffuse in the air for our refreshment and innocent delight, and dy'd them into different colours surpassing the imitation as well as the comprehension of mankind? The products of matter are beyond all the powers of its unactive nature in the vegetation and growth of plants. The self-motion and sensitive life of Brutes are too noble to arise from mechanism. And by giving man understanding and will with a capacity of being religious,

* We may add, the verdure, foliage, and fruit of our trees, the plumage and musick of the birds that sing among their branches.

† Sculpture and embroidery imitate them; and architecture bestows the embellishments of leaves and festoons on fronts and columns.

ous, God in a most exalted manner teacheth us more than the beasts of the field, and maketh us wiser than the fowls of Heaven. That has replenish'd this earth with such an infinite variety of living creatures, so like, and at the same time, in some things, so *unlike* each other. That has implanted on every creature the fear of * man and thereby kept the wolves and lions out of our streets. That adorn'd the parts of the least and meanest insect with such curious gildings and embroideries as display an elegance and beauty no where to be found in the finest works of † art; that has endued every living creature with such a wonderful *instinct*, that the Stork knoweth her appointed time, and the Turtle, and the Crane, and the Swallow, and other birds of passage, observe the time of their coming §. And by these things that are made and visible, the invisible things of God, may be clearly seen and understood. For can we behold the ** Spider's net, the Silk-worm's webs, the Bee's cells, and the Ant's grainaries, without being lost in wonder and contemplation, and forc'd to acknowledge

* A Terrifick character on man.

† Art is only an imitation of nature.

§ This might be likewise apply'd to fish of passage.

** The Birds nest, the Spiders parallels, and the Bees hexagons. The monarchy of Bees, and the republick of Ants, have been often observ'd.

acknowledge the infinite wisdom of the Creator, who has in these creatures given mankind a pattern of * art, industry, and frugality, and thereby taught him to adorn the creation. We may further enquire, Who was it *that weigh'd the mountains in scales, and the hills in a balance*, and disposed of them in the most proper manner for fruitfulness and health, as well as the entertainment of the traveller. That cover'd those mountains with wholesome plants to remedy our diseases; and stor'd them *within* with precious stones, with gold and other useful and precious metals.

So that, as *Moses* tells us, *blessed of the Lord is any land, for the chief things of the ancient mountains, and for the precious things of the lasting hills.*

It was a fine saying of *Plato*, that *God always acts geometrically*; he does every thing *in number, weight, and measure*; he *hath made all things very † good, and loveth all things that he hath made.*

Every thing in this blissful paradise around us is so wisely contriv'd, that nothing can be altered for the better. This drew from

* The Ionic *Volute* is sometimes call'd a Snail's shell, from which it is thought the inventor took his Idea of its spiral turn; a much admir'd ornament in building.

† There is a degree of goodness beyond what is necessary to be seen, in all his works.

from the psalmist these raptures of admiration, and expressions of gratitude, *How manifold are thy works, O Lord; in wisdom hast thou made them all! the earth is full of thy riches: So is this great and wide Sea, wherein are things creeping innumerable, both small and great beasts. There go the ships, there is that Leviathan whom thou hast made to play therein.*

Again, if we look upon the broad * sea, which is so admirably fitted to afford Vapour for Rain, and speed for Traffick, we shall find that the *tide* carries, or brings us back to certain places, at precise hours: But who is it that is so wise and so powerful as *to still the rage thereof at discretion*, to make it stop and then return with such regularity? Even he that *bath plac'd the sand for the bound thereof, by a perpetual decree that it cannot pass; and tho' the waves thereof toss themselves, yet can they not prevail; tho' they roar, yet can they not pass over.*

The great deep alone contains vast treasures for the use of Man, as well as variety of living creatures for his nourishment and deliacy. There the Whale takes his pastime. Our Greenland Fishers fill his skin with *barbed irons, and his head with fish spears; and*

* They that go down to the sea in ships — These see the works of the Lord, and his wonders in the deep. Psalm 107.

and so they play with him as with a bird; they bind him for their maidens, and part him among their merchants. When we consider all this, how can we help being lost in wonder and astonishment, or refrain crying out with the Apostle, *O the depth of the riches, both of the wisdom and knowledge of God, how unsearchable are his works, and his ways, of creation and providence, past finding out!* The whole voice of nature, * every thing from the cedar to the moss on the wall, but especially every animal, loudly proclaims, and in a language universally understood, † that *as every house is built by some man, so he that built all things is God.* It may be further observ'd that the finger of God is more visible in man than in any other creature in this our system, tho' man is the only creature that denies his being. Man's body is so curiously wrought, and so full of miracle that the Plalmist might well say, *Thy hands have made and fashion'd me, I will praise thee, O Lord, for I am fearfully and wonderfully made.* The consideration of this likewise threw Galen in a pang of devotion, so that he wrote a hymn to his

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Creator's

* Not the least stick or straw, or other trifle that falls to the ground but shows it; not the slightest motion produc'd, the least whisper of the air, but tells it.

† There is neither speech nor language but their voices are heard among them. Psalm 19. 3.

Creator's praise. And he that duly observes not only the noble faculties of man's immaterial part, but also the * skill which the divine artist display'd even in the make of his body, will in humble admiration cry out, *Lord what is man that thou art mindfull of him, and the son of man that thou vifitest him? He hath made of one blood all nations of men, for to dwell on all the face of the earth; and hath determined the times before appointed, and the bound of their habitation.* So that before they shall want room by increasing and multiplying, there may be *new heavens and a new earth.* Hence we may see our obligations to adore the deity, and to thank him for making the orb whereon we live, so beautiful and convenient a habitation, *during our sojourning here,* and till we arrive at a *better, even a heavenly country;* for diversifying its climates into such an agreeable variety, that each has its proper seasons, *day and night, winter and summer;* and for giving every thing therein virtues so beneficial to the use of Man.

We not only see our † *maker* in the glass of the creatures, but the *universal harmony* of

* The lowness of the materials exalts our idea of the divine skill. And when we think 'that dust we are, and into dust we shall return,' we are put in mind of another scene, and that pride was not made for man. If we are too much elated, we may recover our temper, by looking at the hole from whence we were digg'd.

† A God, therefore a providence, was an argument of the Stoics.

of things show that they are all under his *direction*. The mutual *gravitation* or * *attraction* of all bodies, which is not essential to matter, is a proof that an immaterial living mind informs and actuates the dead *matter*, and supports the *frame* of the world. We are therefore to consider § mankind as the family of God, living under his continual care and inspection, and accountable to him for all their actions. Every particular man is a part or member of this family, and ought to promote the welfare of it; *for none of us liveth, can live, or ought to live to himself, and no man dieth to himself*; and it becomes us, as stewards of the Creator, to be kind and beneficent to all his creatures. The usefulness of *natural* philosophy, I suppose, appears from what is already said; and it will be further confirm'd by what follows. *The works of the Lord are great, sought out of all them that have pleasure therein. He hath so done his ** marvellous works that they ought to be had in remembrance.* Now a man can't be said to remember, what he does not carefully observe. *Look upon the rainbow, says the wise son of Sirach, and praise*

* Final causes prove, and attraction visibly demonstrates it.

§ From the nature and relation of things we may learn the duties of morality.

** Aristotle judiciously observes there is something of the marvellous all natural things.

*praise him that made it, (the same be said
of all his works) very beautiful it is in the
brightness thereof. It compasseth the heaven
about with a glorious circle, and the hands
of the most high have bended * it.*

Let us therefore study this great volume
of the world; for it is one of † God's books
wherein we may read, in the most legible
characters, the being and providence of its
divine author, who is infinitely glorious in
all perfections.

* God's wond'rous bow of three celestial dyes,
Plac'd as a sign to man amidst the skies.

POPE'S HOMER.

† ————— For heav'n
Is as the book of God before thee set
Wherein to read his wondrous works.

MILTON.

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